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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,254	12/01/2003	Nina Mishra	10003555-2	3546

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EXAMINER	
BARBEE, MANUEL L	
ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/726,254

Applicant(s)

MISHRA ET AL.

Examiner

Manuel L. Barbee

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-17 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-17 and 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1-9-04</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Objections*

1. Claims 5, 6, 19, 20 and 22 are objected to because of the following informalities:

In claim 5, line 1 of the claim, delete "4", and insert --1--.

In claim 6, line 1 of the claim, delete "4", and insert --1--.

In claim 19, line 1 of the claim, delete "1", and insert --15--.

In claim 20, line 1 of the claim, delete "method", and insert --article--.

In claim 20, line 1 of the claim, delete "1", and insert --15--.

In claim 22, line 12 of the claim, delete "aid", and insert --said--.

Appropriate correction is required.

### *Double Patenting*

2. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. Claims 2 and 16 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 8 and 18 of prior U.S. Patent No. 6,684,177. This is a double patenting rejection.

Claim 2 and 16 of the present application contain the added text "prior to clustering" for the same step also found in claims 8 and 18 of the '177 patent. While

this text is not found in claims 8 and 18 of the '177 patent, the fact that the step is recited immediately before the clustering step in claims 8 and 18 suggests that the merging should happen before the clustering. Further, the original claims 2 and 16 in the application for the '177 patent are identical to claims 2 and 16 in the present application and were indicated to contain allowable material. Since those claims were combined with independent claims to form the patent claims 8 and 18, the implication is that the steps are executed in the order that they appear in the claims.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3, 5-7, 13, 15, 17, 19, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung et al. (US Patent No. 6,397,166) in view of Fayyad et al. (US Patent No. 6,115,708).

With regard to determining a set of intermediate centers, as shown in claims 1, 15, 21 and 22, Leung et al. teach determining cluster centers (col. 6, lines 19-40). With regard to assigning each data point to the nearest center, as shown in claims 1, 15, 21 and 22, Leung et al. teach using a similarity measure to determine whether an item should be assigned to a particular cluster (col. 7, lines 5-22). With regard to weighting the centers by the number of points assigned to the center, as shown in claims 1, 15, 21 and 22, Leung et al. teach determining the overall distance to determine a measure of

goodness for clusters (col. 7, lines 23-37). With regard to clustering weighted centers together to find final centers using a specific error metric and clustering method, as shown in claims 1, 7, 15, 21 and 22, Leung et al. teach combining clusters for a number of iterations (col. 7, line 38 – col. 4, line 14). With regard to a main memory and a processor, as shown in claims 21 and 22, Leung et al. teach a computer-implemented method (col. 4, lines 53-63). A computer inherently contains memory. Leung et al. do not teach partitioning a set into disjoint pieces or plural processors, as shown in claims 1, 15, 21 and 22.

Fayyad et al. teach deciding partitions on a set of points (col. 6, lines 47-57). Fayyad et al. further teach using more than one processing unit (col. 4, lines 15-24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the clustering method, as taught by Leung et al., to include partitioning and using more than one processor, as taught by Fayyad et al. because then the clustering technique would have been useful to a wide array of applications (Fayyad et al., col. 2, lines 47-56; col. 1, lines 5-24).

With regard to performing clustering upon obtaining iteratively obtained weighted intermediate clusters, as shown in claim 5, and replacing S with weighted intermediate centers from the previous iteration, as shown in claim 6, Leung et al. teach an iteration method for obtaining a cluster and assigning items to cluster with the highest similarity measure (col. 7, lines 1-13; Figs. 1A and 1B, steps 106, 111 and 112). With regard to repeating the partitioning, determining, assigning and weighting for a second set of data points, and clustering the second set of points, as shown in claims 13 and 19, Leung et

al. teach using an iteration variable to iteratively perform a cluster method on more than one set of points (col. 6, line 59 – col. 7, line 13; Figs. 1A and 1B).

Leung et al. do not teach having each partitioned piece small enough to fit into the memory to be used for processing the piece, as shown in claims 3 and 17. Fayyad et al. teach having a memory able to handle small samples and running the algorithm on a RAM buffer (col. 8, line 64 – col. 9, line 14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the clustering method, as taught by Leung et al., to include a memory capable of handling a piece of a set of data, as taught by Leung et al. because then the data could have been processed using a smaller and thus less expensive memory.

6. Claims 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung et al. and Fayyad et al. as applied to claim 1 above above, and further in view of Fahy (US Patent Application Publication 2002/0052692).

Leung et al. and Fayyad teach all the limitations of claim 1 upon which claims 8 and 11 depend. With regard to the Euclidean distance, as shown in claim 11, Leung et al. further teach using the Euclidean distance, (col. 1, lines 29-38). Neither Leung et al. nor Fayyad teach minimizing the sum of the squares of the distances between points and their nearest centers. Fahy teaches using Ward's agglomeration, which focuses on minimizing the sum of the squares involving distances between hypothetical cluster pairs (page 6, par. 59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the clustering method combination, as taught by Leung et al. and Fayyad et al., to include summing the squares of the distances

between cluster pairs, because then the clustering method would have performed well for cases where the objects of the clusters form naturally distinct groups (Fahy, page 6, par. 59).

7. Claims 9, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung et al. in view of Fayyad et al. as applied to claim 1 above, and further in view of Tuzhilin (US Patent No. 6,236,978).

Leung et al. and Fayyad et al. teach all the limitations of claim 1 upon which claims 9, 10 and 12 depend. With regard to the Euclidean distance, as shown in claim 12, Leung et al. further teach using the Euclidean distance, (col. 1, lines 29-38). Neither Leung et al. nor Fayyad teach minimizing the sum of the squares of the distances or an approximation-based method. Tuzhilin teaches an approximate rule that minimizes the sum of the distances from point to other points in a cluster. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the clustering method combination, as taught by Leung et al. and Fayyad et al., to include the approximate rule, because then fewer rules would have been needed to deal with a large amount of data (Tuzhilin, col. 1, line 52 - col. 2, line 40).

8. Claims 14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung et al. in view of Fayyad et al. as applied to claims 1 and 15 above, and further in view of Martin (US Patent No. 6,003,036).

Leung et al. and Fayyad et al. teach all the limitations of claim 1 upon which claim 14 depends and claim 15 upon which claim 20 depends. Neither Leung et al. nor Fayyad et al. teach performing the partitioning, assigning and weighting in parallel for

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each piece. Martin et al. teach parallel processing in a partitioning method (Abstract; col. 12, lines 17-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the clustering method combination, as taught by Leung et al. and Fayyad et al., to include parallel processing, as taught by Martin, because then processing would have been completed more quickly.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manuel L. Barbee whose telephone number is 571-272-2212. The examiner can normally be reached on Monday-Friday from 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on 571-272-2216. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0976.

mlb

  
MARC S. HOFF  
SUPERVISORY PATENT EXAMINER  
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